

PROVINCE OF BRITISH COLUMBIA.

DEPARTMENT OF AGRICULTURE
(LIVE STOCK BRANCH - POULTRY DIVISION)

Chicken-pox in Poultry.

Preventive Suggestions based on Practical Experiments.

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CHICKEN-POX and the many other infections usually running in conjunction with it, termed diphtheritic roup, canker, and swollen head, is a disease of which poultrymen of this Province should have a more intimate knowledge. As long as this affection stays on the skin of the head very little trouble is given. Many attempts have been made to keep this disease in check, and the officials of the Poultry Division have worked hard to get it under absolute control. As it is liable to affect any or every poultry-breeder in this Province, it is the duty of all to do their best to keep it from spreading by taking preventive measures.

Owing to the fact that a number of careless poultry-keepers are often inclined to allow birds that have died of this disease to lie on the manure-heap or somewhere near the poultry-run, it has managed to get a firm hold on some flocks. Others have purchased fowls that were affected with this trouble, thereby infecting the other healthy stock on their places. Pigeons and other birds have been allowed to walk on the ground that has been contaminated, and thus carry the germs of the disease away with them. In many cases the disease has been brought in this way to poultry plants which were previously quite free from it. Wherever this practice has been noticed the owners of the affected stock have been warned to destroy the bodies of dead birds, and as far as possible to prevent smaller birds coming in close contact with the stock suffering from roup.

Various experimental stations have proved that fowls raised from the time of hatching on ground where no other poultry or pigeons have been do not develop this disease, though it may easily be brought in from infected flocks contracted from wild birds by the latter treading on the ground and spreading the infection.

Owing to lack of knowledge on the part of many poultry-keepers the presence of an attack of diphtheritic roup is often not noticed until some of the birds die. Even after the death of one or two birds the disease is sometimes passed over owing to the fact that the poultryman often fails to make a post-mortem examination or because he does not recognize the symptoms and effects of the disease.

THE SYMPTOMS.

This disease shows itself in two forms:

(1.) Chicken-pox (*Epithelium contagiosum*) affects the head of poultry chiefly and appears as an eruption of different-shaped nodules varying greatly in size, from a pin-head up. The parts of the head not well feathered are the most affected. These nodules appear in the beginning as yellow sores and are oftentimes termed ulcers. These sores may easily spread or dry up after affecting only the one place and the bird recover rapidly.

(2.) Small diphtheritic patches appearing in and around the mouth, on the tongue, and at the mouth of the windpipe are the symptoms most common during the early stages of the trouble. Should the fowls be in poor condition when they are attacked by this disease, or if it is allowed to continue without preventive measures being taken, these small patches will gradually enlarge and spread on the tongue so that the fowls cannot eat, or will grow over the mouth of the windpipe,



Head of fowl affected with both chicken-pox and diphtheritic roup (*Contagiosum epithelium*).

in which case the fowl will be unable to breathe. They also grow at the side of the face. This last symptom is often called canker. In some cases the growth develops on the inside of a fowl's head and works its way into the eye, gradually causing blindness.

PREVENTION.

The most important preventive of all diseases, this in particular is cleanliness.

If any diseased birds are found they should be isolated and all dead birds should be burned, not buried.

If one handles affected stock or walks on ground that infected stock is running upon, they should thoroughly disinfect their hands and shoes.

All poultry-houses should be cleaned and disinfected regularly.

The ground on which fowls are running should be kept clean and sweet. This being a skin-disease, infection is readily gained by a scratch on the comb or face from another fowl's claw or from the bird's own claw.

When one purchases new stock or returns them from any poultry exhibition, they should isolate same for two weeks to see if the stock is free from infection. Each fowl should be examined occasionally. This should be taken especial note of in the moister sections of the Province.

An excellent germicide to use in the drinking water is made up of oil of sassafras and sulphuric acid in the following manner: Stir rapidly 2 oz. oil of sassafras into 2 gallons water. Then pour and stir very slowly 2 fluid ounces sulphuric acid into this mixture. In use put one tablespoonful of this mixture in each gallon of drinking water for adult birds.

TREATMENT.

All poultry keepers and pigeon breeders, whether their flocks are large or small, should cooperate and check the spread of this form of roup in this Province.

When this disease is present it is advisable for the owner to keep his fowls housed, as far as possible, for the winter months, and to lime the runs thoroughly with pure, unslaked lime.

If lime is applied just before or during rain it will eat into the soil and help to destroy all disease germs that are in the ground. If fowls are housed in open-front, fresh-air houses, where no draughts can strike the birds, they can be kept quite clean by changing the straw or litter occasionally and using a solution of crude carbolic acid of good strength about the roasts and dropboards. Care should be taken, if there is the slightest sign of the presence of the disease, that all straw is burned when cleaning.



In cases of diphtheritic roup the pus often collects about the eyes of the fowl as shown in this illustration.

Some of the various roup cures that have been advertised so widely have not been of use in checking the disease. Experiments have been conducted by the Poultry Division in an endeavour to cure birds of this disease and prevent it spreading to other flocks by means of vaccination.

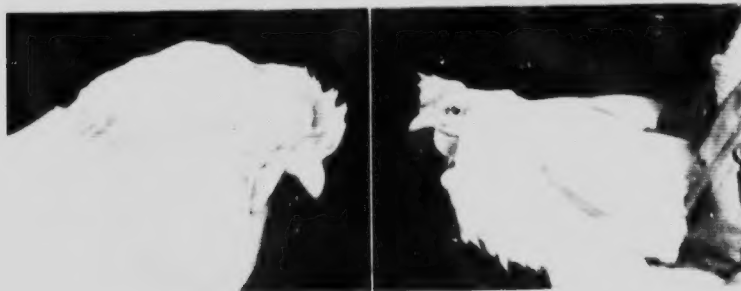
VACCINATION.

Subcutaneous vaccination, another preventive measure, is given a separate title owing to its great importance in causing fowls to be immune. The writer can get no definite information from any Canadian source of this important preventive measure being made use of.

This method of checking chicken-pox was first practised by Manteufel in 1905. Since then practice of this measure has been made use of by many, amongst whom are Hadley & Beach, of Wisconsin; J. R. Beach, California; and Mack & Records, of Nevada. All have given excellent data with good results in approximately 98 per cent. of the cases. Beach, of California, goes so far as to recommend its adoption by practical poultrymen.

THE USE OF VACCINE.

- (1.) Sterility and cleanliness is the most factor.
- (2.) No means as yet have been found to preserve the vaccine. Its use, therefore, is recommended within three days of its being made.
- (3.) Vaccine should be kept in a cool place, and on ice if possible.



A. B.
The heads of two fowls, both of which were badly affected with chicken pox and diphtheritic roup. A was taken previous to vaccination, and B shows one of the birds five weeks after the second injection.

- (4.) When using, the vaccine should be kept in two bottles. One, a wide-mouth bottle from which the vaccine may be taken quickly.
- (5.) A hypodermic syringe of 4 or 12 c.c. capacity is best suited for the work.
- (6.) Needles 16 or 18 gauge, from 2 to 2½ inches in length, should be used.
- (7.) Two doses of 1 c.c. are given five to seven days apart.
- (8.) Subcutaneous vaccination is followed by injection under left wing. The exposed skin should be cleansed by using a piece of cotton saturated with some good disinfecting solution.
- (9.) One man and helper can easily handle and vaccinate 150 birds in an hour.



Both these illustrations show the pox scabs on the combs.

CONCLUSION.

Flocks were vaccinated by the writer numbering approximately 3,000 birds, ranging from five weeks to three years in age. No bad effects were noticed in any one case, though there were three deaths due mainly to emaciation before the injection.

Control birds were left in each flock, of which 40 per cent. died.

Egg production was not affected in any way, more than the handling of the birds would cause, by vaccination.

Some flocks were vaccinated with vaccine made from scabs only. Others were vaccinated from vaccine made from scabs and cheesy material. Some were vacci-

nated with vaccine made up of scabs and exudate mixed together before attenuated. Others were vaccinated with vaccine made by attenuating scabs and exudate separately and mixing the two vaccines together before injection.

The best results were obtained amongst the seven flocks by the use of the vaccine made up of the scabs and exudate ground together before being attenuated.

Data was not obtainable from any source relating to the vaccination of young chicks. Our experiments show that good results are obtainable by vaccinating five- to eight-week-old chicks (majority show signs of disease after severe chilling) twice with $\frac{1}{2}$ c.c. of vaccine at intervals of three to four days.

Two c.c. was injected in three or four very bad cases expected to die in a few hours. Cases recovered and cannot be noticed other than by band number in flocks after expiration of seven months.

Strong tincture of iodine is recommended as the best disinfectant for use with this disease. The scabs and exudate should be removed with a sterile pair of forceps and tincture of iodine applied to the exposed surface.



Manure-piles should not be allowed unprotected about the hen-house. If they are, when diphtheric roup is present in the plant they should be burned. This will give your neighbour's fowl every protection as well as your own.

The method of preparation of the vaccine is as follows: One-half gramme of chicken-pox scabs and exudate i. e. 100 c.c. of physiological salt solution is the proportion used. The scabs and exudate are first weighed out and ground in a sterile mortar with a small amount of the salt solution until pulverized. This material is poured in a flask, stoppered, placed in a water bath, and attenuated at a constant temperature of 55° C. for one hour. It is then filtered into a sterile flask or bottle and the remainder of the salt solution poured through the filter so as to wash out as much of the pulverized material as possible. It is very essential that the vaccine be used as soon after preparation as possible. Since no preservative is used it will deteriorate if allowed to stand. If old vaccine is used, poor results in the form of abscesses at the point of inoculation and the death of the fowl are to be expected.

For further detailed information we could refer our readers to:
Circular No. 115. By J. R. Beach, University of California, Berkeley, Cal.
Bulletin No. 82. By Mack and Records, University of Nevada, Reno, Nevada.
American Veterinary Review, Vol. XLIV., No. 3. Article by Hadley & Beach, Madison, Wisconsin.

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